

AS  
--113 mL of 1.6 M *n*-BuLi solution (0.18 mol) was added to a solution of 31.3 g of 2-methyl-4-bromo-thiophene (0.177 mol) in 150 mL of ether at -70°C under stirring. The resulting solution was kept under stirring at -60 to -70°C for 30 min and then was added of 22.3 g of 2-methyl-4-formyl-thiophene (0.177 mol) in 100 mL of ether. The mixture was allowed to warm to room temperature, then neutralized with 10% aqueous solution of NH<sub>4</sub>Cl and washed with water. The organic phase was separated and evaporated. The crude bis(2-methyl-4-thienyl)methanol (or 2,2'-dimethyl-4,4'-dithienyl carbinol) was obtained.--

Please replace the paragraph beginning at page 44, line 23, and ending at page 45, line 2 with the following paragraph:

AL6  
--A suspension of 35.5 g of AlCl<sub>3</sub> (0.266 mol) in 100 mL of ether was added slowly to a suspension of 10 g of LiAlH<sub>4</sub> (0.266 mol) in 100 mL of ether. The resulting mixture was treated with the solution of the carbinol (obtained as described above) in 100 mL ether. The reaction mixture was refluxed for additional 1 h, cooled to room temperature and subsequently added of 100 mL of ethyl acetate. Then it was treated with 300 mL of water and 300 mL of ether. The organic phase was collected, washed with water, dried by MgSO<sub>4</sub> and evaporated off. The residue was distilled at 90 to 110°C/0.5 mmHg. Yield 23.2 g (63%). The title compound was characterized by <sup>1</sup>H-NMR spectroscopy.--

#### In the Claims

Please amend claims 1-25, 27, and 29-32 to read as follows:

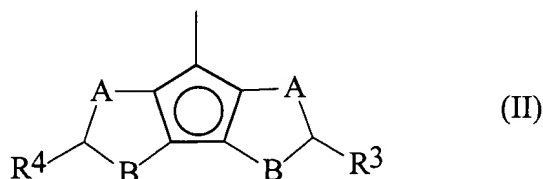
AM  
--1. (Amended) A metallocene compound of general formula (I):



wherein

L is a divalent group bridging the moieties G and Z, selected from  $\text{CR}^1\text{R}^2$ ,  $\text{SiR}^1\text{R}^2$  or  $(\text{CR}^1\text{R}^2)_2$ , wherein  $\text{R}^1$  and  $\text{R}^2$ , which may be the same as or different from each other, are hydrogen, a  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_2\text{-C}_{20}$ -alkenyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl, or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom, which can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):

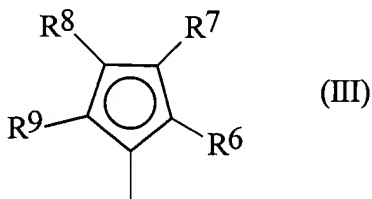


wherein

$\text{R}^3$  and  $\text{R}^4$ , which may be the same as or different from each other, are hydrogen, a  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_2\text{-C}_{20}$ -alkenyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl, or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or  $\text{CR}^5$ , wherein  $\text{R}^5$  is hydrogen, a  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_2\text{-C}_{20}$ -alkenyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl, or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $\text{CR}^5$  or if B is S or O, then A is  $\text{CR}^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

G is a moiety of formula (III):



wherein

$\text{R}^6$ ,  $\text{R}^7$ ,  $\text{R}^8$  and  $\text{R}^9$ , which may be the same as or different from each other, are hydrogen, a  $\text{C}_1\text{-C}_{20}$ -alkyl,  $\text{C}_3\text{-C}_{20}$ -cycloalkyl,  $\text{C}_2\text{-C}_{20}$ -alkenyl,  $\text{C}_6\text{-C}_{20}$ -aryl,  $\text{C}_7\text{-C}_{20}$ -alkylaryl, or  $\text{C}_7\text{-C}_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs  $\text{R}^6$  and  $\text{R}^7$ , and  $\text{R}^8$  and  $\text{R}^9$  can form a ring comprising from 3 to 8

atoms, optionally bearing substituents, with the proviso that  $R^7$  is different from  $R^8$  and when  $R^7$  is a tert-butyl radical,  $R^8$  is not hydrogen;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group  $R^{10}$ ,  $OR^{10}$ ,  $OSO_2CF_3$ ,  $OCOR^{10}$ ,  $SR^{10}$ ,  $NR^{10}_2$  or  $PR^{10}_2$ , wherein the substituents  $R^{10}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,

$C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms;

p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2;

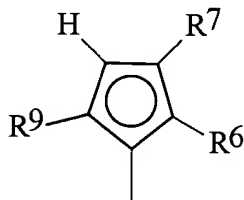
with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride.

2. (Amended) The metallocene according to claim 1, wherein the transition metal M is selected from titanium, zirconium or hafnium.
3. (Amended) The metallocene according to claim 1, wherein L is  $CMe_2$  or  $SiMe_2$ .
4. (Amended) The metallocene according to claim 1, wherein A or B is a sulfur atom and the other is a CH group.
5. (Amended) The metallocene according to claim 1, wherein  $R^3$  and  $R^4$  are the same

and are a C<sub>1</sub>-C<sub>20</sub>-alkyl group, which can contain a silicon atom.

6. (Amended) The metallocene according to claim 1, wherein G is a moiety of formula (IIIa):



(IIIa)

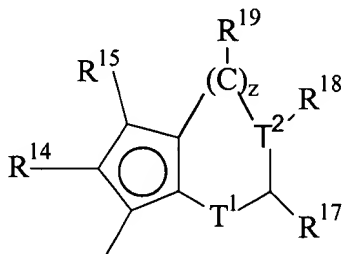
wherein

R<sup>6</sup> and R<sup>9</sup> equal to or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

R<sup>7</sup> is a C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl or a QR<sup>11</sup>R<sup>12</sup>R<sup>13</sup> group, wherein Q is C, Si, or Ge;

R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup>, which may be the same as or different from each other, are hydrogen, C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radicals, optionally containing a heteroatom, with the proviso that when Q is a carbon atom, at least one of R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> is a hydrogen atom.

7. (Amended) The metallocene according to claim 6, wherein R<sup>7</sup> is a phenyl, a CHR<sup>11</sup>R<sup>12</sup> or a SiR<sup>11</sup>R<sup>12</sup>R<sup>13</sup> group, wherein R<sup>11</sup>, R<sup>12</sup> and R<sup>13</sup> are hydrogen or C<sub>1</sub>-C<sub>20</sub>-alkyl groups.
8. (Amended) The metallocene according to claim 1, wherein G is a moiety of formula (IV):



(IV)

wherein

T<sup>1</sup> is a sulfur atom or a CR<sup>16</sup> group;

T<sup>2</sup> is a carbon atom or a nitrogen atom;

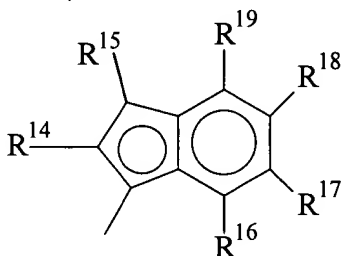
z is 1 or 0;

the ring containing T<sup>1</sup> and T<sup>2</sup> has double bonds in the allowed position;

with the proviso that if z is 1, T<sup>1</sup> is a CR<sup>16</sup> group and T<sup>2</sup> is a carbon atom and the ring formed is a benzene ring; and if z is 0, T<sup>2</sup> bonds directly the cyclopentadienyl ring, the 5 membered ring formed has double bond in any of the allowed positions having an aromatic character and T<sup>1</sup> and T<sup>2</sup> are not at the same time, a sulfur atom and a nitrogen atom.

R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup>, same or different, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, any of two adjacent R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup> can form a ring comprising 4 to 8 atoms optionally bearing substituents.

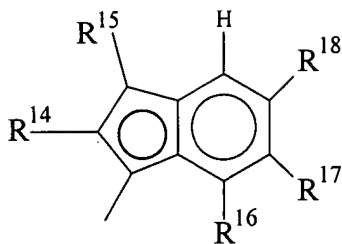
9. (Amended) The metallocene according to claim 8, wherein G is a moiety of formula (IVa):



(IVa)

wherein R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms, and any of two adjacent R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup> can form a ring comprising 4 to 8 atoms optionally bearing substituents and the benzene ring optionally being perhydrated.

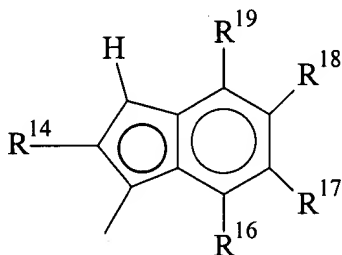
10. (Amended) The metallocene according to claim 9, wherein G is a moiety of formula (IVb)



(IVb)

wherein  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ , and  $R^{18}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and any of two adjacent  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$  can form a ring comprising 4 to 8 atoms optionally bearing substituents;  $R^{14}$  being a  $C_1$ - $C_{20}$ -alkyl or  $C_6$ - $C_{20}$ -aryl group.

11. (Amended) The metallocene according to claim 9, wherein G is a moiety of formula (IVc)

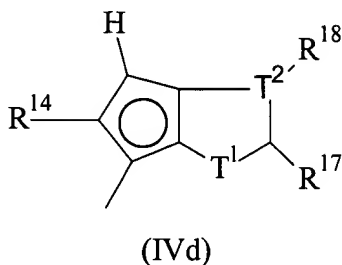


(IVc)

wherein  $R^{14}$ ,  $R^{16}$ ,  $R^{17}$ , and  $R^{18}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and optionally any of two adjacent  $R^{16}$ ,  $R^{17}$ , and  $R^{18}$  can form a ring comprising 4 to 8 atoms optionally bearing substituents;  $R^{19}$  is a  $C_1$ - $C_{20}$ -alkyl or  $C_6$ - $C_{20}$ -aryl group or forms with  $R^{18}$  a benzene ring optionally bearing substituents.

12. (Amended) The metallocene according to claim 11, wherein  $R^{14}$  is a  $C_1$ - $C_{20}$ -alkyl or  $C_6$ - $C_{20}$ -aryl group.
13. (Amended) The metallocene according to claim 11, wherein  $R^{16}$  is a  $C_1$ - $C_{20}$ -alkyl or  $C_6$ - $C_{20}$ -aryl.

14. (Amended) The metallocene according to claim 8, wherein G is a moiety of formula (IVd):



wherein

T<sup>1</sup> is a sulfur atom or a CR<sup>16</sup> group;

T<sup>2</sup> is a carbon atom or a nitrogen atom;

the 5 member ring formed by T<sup>1</sup> and T<sup>2</sup> has double bonds in any of the allowed positions, having an aromatic character;

with the proviso that if T<sup>1</sup> is a sulphur atom T<sup>2</sup> is not a nitrogen atom;

R<sup>14</sup>, R<sup>17</sup> and R<sup>18</sup> which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements and R<sup>17</sup> and R<sup>18</sup> can form a ring comprising 4 to 8 atoms optionally bearing substituents.

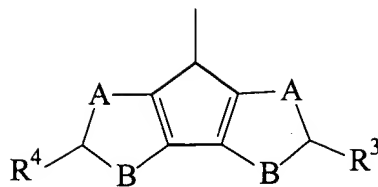
15. (Amended) The metallocene according to claim 14 wherein T<sup>2</sup> is a carbon atom; T<sup>1</sup> is a sulphur atom and R<sup>14</sup>, R<sup>17</sup> and R<sup>18</sup> equal to or different from each other are a C<sub>1</sub>-C<sub>20</sub>-alkyl, or C<sub>6</sub>-C<sub>20</sub>-aryl.

16. (Amended) A ligand of formula (V):



wherein L is a divalent group bridging the moieties G and Z, selected from CR<sup>1</sup>R<sup>2</sup>, SiR<sup>1</sup>R<sup>2</sup> or (CR<sup>1</sup>R<sup>2</sup>)<sub>2</sub>, wherein R<sup>1</sup> and R<sup>2</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z' is a moiety of formula (VI):



(VI)

or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

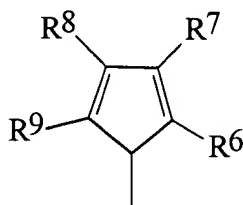
*A17*

$R^3$  and  $R^4$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom;

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A and B are sulfur (S), oxygen (O) or  $CR^5$ , wherein  $R^5$  is hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $CR^5$  or if B is S or O, then A is  $CR^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



(VII)

or its double bond isomers;

wherein

$R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs  $R^6$  and  $R^7$ , and  $R^8$  and  $R^9$  can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with



the proviso that  $R^7$  is different from  $R^8$  and when  $R^7$  is a tert-butyl radical,  $R^8$  is not hydrogen.

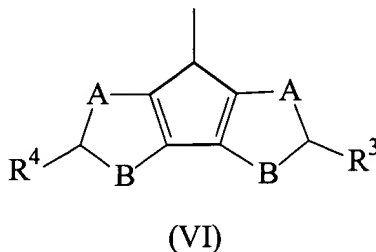
17. (Amended) A process for the preparation of a ligand of formula (V):



wherein

L is a divalent group bridging the moieties G and Z, selected from  $CR^1R^2$ ,  $SiR^1R^2$  or  $(CR^1R^2)_2$ , wherein  $R^1$  and  $R^2$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

$Z'$  is a moiety of formula (VI):



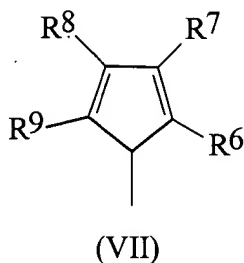
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

$R^3$  and  $R^4$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or  $CR^5$ , wherein  $R^5$  is hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $CR^5$  or if B is S or O, then A is  $CR^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



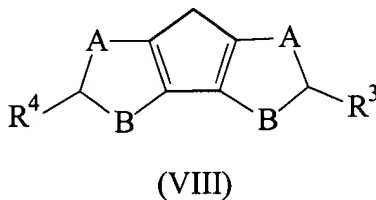
or its double bond isomers;

wherein

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R<sup>6</sup> and R<sup>7</sup>, and R<sup>8</sup> and R<sup>9</sup> can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R<sup>7</sup> is different from R<sup>8</sup> and when R<sup>7</sup> is a tert-butyl radical, R<sup>8</sup> is not hydrogen;

comprising the following steps:

- a) contacting a compound of the formula (VIII) with a base selected from the group consisting of metallic sodium and potassium, sodium and potassium hydroxide and an organic lithium compound, wherein the molar ratio between the compound of the formula (VIII) and said base is at least 1:1;

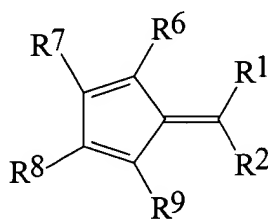


wherein

R<sup>3</sup> and R<sup>4</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR<sup>5</sup>, wherein R<sup>5</sup> is hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR<sup>5</sup> or if B is S or O, then A is CR<sup>5</sup>, and wherein the rings containing A and B have a double bond in the allowed position;

- b) contacting the obtained anionic compounds of the formula (VIII) from step a) with a compound of formula (IX):



(IX)

wherein

R<sup>1</sup> and R<sup>2</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R<sup>6</sup> and R<sup>7</sup>, and R<sup>8</sup> and R<sup>9</sup> can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R<sup>7</sup> is different from R<sup>8</sup> and when R<sup>7</sup> is a tert-butyl radical, R<sup>8</sup> is not hydrogen; and then

- (c) treating the obtained product from step b) with a protonating agent.

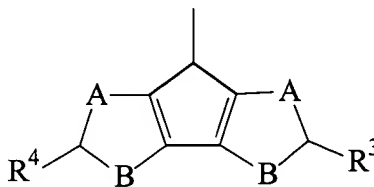
18. (Amended) A process for the preparation of a ligand of formula (V):

LG'Z' (V)

wherein

AM  
L is a divalent group bridging the moieties G and Z, selected from CR<sup>1</sup>R<sup>2</sup>, SiR<sup>1</sup>R<sup>2</sup> or (CR<sup>1</sup>R<sup>2</sup>)<sub>2</sub>, wherein R<sup>1</sup> and R<sup>2</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z' is a moiety of formula (VI):



(VI)

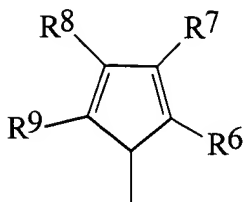
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

R<sup>3</sup> and R<sup>4</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or CR<sup>5</sup>, wherein R<sup>5</sup> is hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR<sup>5</sup> or if B is S or O, then A is CR<sup>5</sup>, and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



(VII)

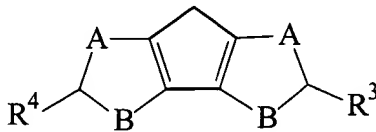
or its double bond isomers;

wherein

$R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs  $R^6$  and  $R^7$ , and  $R^8$  and  $R^9$  can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that  $R^7$  is different from  $R^8$  and when  $R^7$  is a tert-butyl radical,  $R^8$  is not hydrogen;

comprising the following steps:

- a) contacting a compound of the formula (VIII) with a base selected from the group consisting of metallic sodium and potassium, sodium and potassium hydroxide and an organic lithium compound, wherein the molar ratio between the compound of the formula (VIII) and said base is at least 1:1



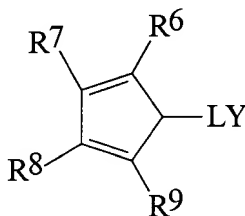
(VIII)

wherein

$R^3$  and  $R^4$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom; A and B are sulfur (S), oxygen (O) or  $CR^5$ , wherein  $R^5$  is hydrogen, a  $C_1$ - $C_{20}$ -alkyl,

C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is CR<sup>5</sup> or if B is S or O, then A is CR<sup>5</sup>, and wherein the rings containing A and B have a double bond in the allowed position;

- b) contacting the obtained anionic compounds from step a) with a compound of formula (IX):



(IX)

wherein Y is a halogen radical selected from the group consisting of chloride, bromide and iodide;

L is a divalent group bridging the moieties G and Z, selected from CR<sup>1</sup>R<sup>2</sup>, SiR<sup>1</sup>R<sup>2</sup> or (CR<sup>1</sup>R<sup>2</sup>)<sub>2</sub>, wherein R<sup>1</sup> and R<sup>2</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R<sup>6</sup> and R<sup>7</sup>, and R<sup>8</sup> and R<sup>9</sup> can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R<sup>7</sup> is different from R<sup>8</sup> and when R<sup>7</sup> is a tert-butyl radical, R<sup>8</sup> is not hydrogen.

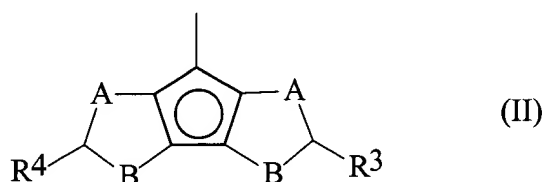
19. (Amended) A process for the preparation of a metallocene compound of general formula (I):



wherein

L is a divalent group bridging the moieties G and Z, selected from  $CR^1R^2$ ,  $SiR^1R^2$  or  $(CR^1R^2)_2$ , wherein  $R^1$  and  $R^2$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):

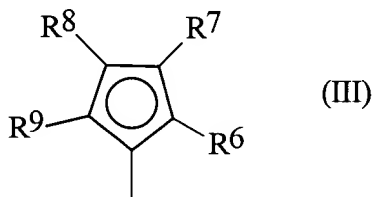


wherein

$R^3$  and  $R^4$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or  $CR^5$ , wherein  $R^5$  is hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $CR^5$  or if B is S or O, then A is  $CR^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

G is a moiety of formula (III):



wherein

$R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,

C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs R<sup>6</sup> and R<sup>7</sup>, and R<sup>8</sup> and R<sup>9</sup> can form a ring comprising from 3 to 8 atoms, optionally bearing substituents, with the proviso that R<sup>7</sup> is different from R<sup>8</sup> and when R<sup>7</sup> is a tert-butyl radical, R<sup>8</sup> is not hydrogen;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group R<sup>10</sup>, OR<sup>10</sup>, OSO<sub>2</sub>CF<sub>3</sub>, OCOR<sup>10</sup>, SR<sup>10</sup>, NR<sup>10</sup><sub>2</sub> or PR<sup>10</sup><sub>2</sub>, wherein the substituents R<sup>10</sup> are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms; p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2; with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride;

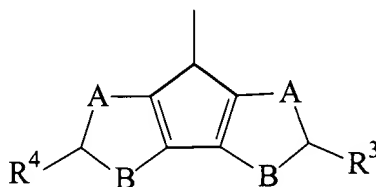
said process comprising contacting the ligand of general formula (V)





wherein L is a divalent group bridging the moieties G and Z, selected from  $\text{CR}^1\text{R}^2$ ,  $\text{SiR}^1\text{R}^2$  or  $(\text{CR}^1\text{R}^2)_2$ , wherein  $\text{R}^1$  and  $\text{R}^2$ , which may be the same as or different from each other, are hydrogen, a  $\text{C}_1$ - $\text{C}_{20}$ -alkyl,  $\text{C}_3$ - $\text{C}_{20}$ -cycloalkyl,  $\text{C}_2$ - $\text{C}_{20}$ -alkenyl,  $\text{C}_6$ - $\text{C}_{20}$ -aryl,  $\text{C}_7$ - $\text{C}_{20}$ -alkylaryl, or  $\text{C}_7$ - $\text{C}_{20}$ -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

AM  
Z' is a moiety of formula (VI):



(VI)

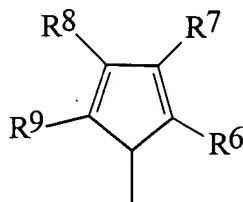
or its double bond isomers;

wherein the double bonds are in any of the allowed positions;

$\text{R}^3$  and  $\text{R}^4$ , which may be the same as or different from each other, are hydrogen, a  $\text{C}_1$ - $\text{C}_{20}$ -alkyl,  $\text{C}_3$ - $\text{C}_{20}$ -cycloalkyl,  $\text{C}_2$ - $\text{C}_{20}$ -alkenyl,  $\text{C}_6$ - $\text{C}_{20}$ -aryl,  $\text{C}_7$ - $\text{C}_{20}$ -alkylaryl, or  $\text{C}_7$ - $\text{C}_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or  $\text{CR}^5$ , wherein  $\text{R}^5$  is hydrogen, a  $\text{C}_1$ - $\text{C}_{20}$ -alkyl,  $\text{C}_3$ - $\text{C}_{20}$ -cycloalkyl,  $\text{C}_2$ - $\text{C}_{20}$ -alkenyl,  $\text{C}_6$ - $\text{C}_{20}$ -aryl,  $\text{C}_7$ - $\text{C}_{20}$ -alkylaryl, or  $\text{C}_7$ - $\text{C}_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $\text{CR}^5$  or if B is S or O, then A is  $\text{CR}^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

G' is a moiety of formula (VII):



(VII)

or its double bond isomers;

wherein  $R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and at least one of substituent pairs  $R^6$  and  $R^7$ , and  $R^8$  and  $R^9$  being capable of forming a ring comprising from 3 to 8 atoms, optionally having substituents, with the proviso that  $R^7$  is different from  $R^8$  and when  $R^7$  is a tert-butyl radical,  $R^8$  is not hydrogen;

with a base capable of forming a corresponding dianionic compound and thereafter with a compound of general formula  $MX_{p+2}$ , wherein

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group  $R^{10}$ ,  $OR^{10}$ ,  $OSO_2CF_3$ ,  $OCOR^{10}$ ,  $SR^{10}$ ,  $NR^{10}_2$  or  $PR^{10}_2$ , wherein the substituents  $R^{10}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms; and

p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2.

20. (Amended) A catalyst obtained by contacting:

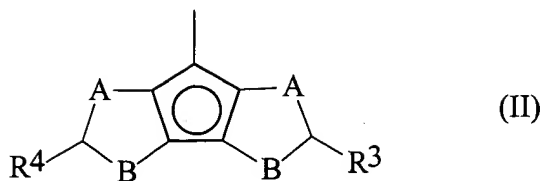
(A) a metallocene compound of formula (I)



wherein

L is a divalent group bridging the moieties G and Z, selected from  $CR^1R^2$ ,  $SiR^1R^2$  or  $(CR^1R^2)_2$ , wherein  $R^1$  and  $R^2$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):



wherein

$R^3$  and  $R^4$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or  $CR^5$ , wherein  $R^5$  is hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $CR^5$  or if B is S or O, then A is  $CR^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

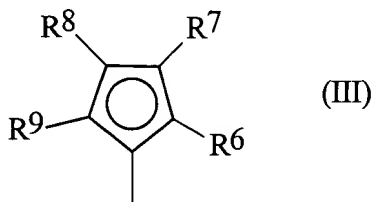
X, which may be the same or different, is a hydrogen atom, halogen atom, a group  $R^{10}$ ,  $OR^{10}$ ,  $OSO_2CF_3$ ,  $OCOR^{10}$ ,  $SR^{10}$ ,  $NR^{10}_2$  or  $PR^{10}_2$ , wherein the substituents  $R^{10}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms;

p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2;

with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentadienyl)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-

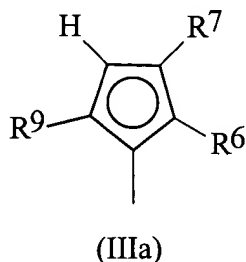
cyclopentadiene)zirconium dichloride, dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentadiene)zirconium dichloride;  
and G is a moiety of formula (III):



wherein R<sup>6</sup>, R<sup>7</sup>, R<sup>8</sup> and R<sup>9</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, at least one of substituent pairs R<sup>6</sup> and R<sup>7</sup>, and R<sup>8</sup> and R<sup>9</sup> can form a ring comprising from 3 to 8 atoms, optionally bearing substituents; with the proviso that R<sup>7</sup> is different from R<sup>8</sup> and when R<sup>7</sup> is a tertbutyl radical R<sup>8</sup> is not hydrogen; and

(B) at least one of an alumoxane and a compound capable of forming an alkyl metallocene.

21. (Amended) The catalyst according to claim 20 wherein in the metallocene compound of formula (I) G is a moiety of formula (IIIa)



wherein

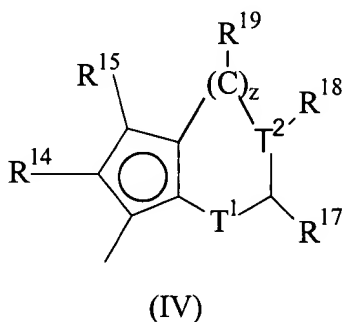
R<sup>6</sup> and R<sup>9</sup> equal to or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical,

optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements

$R^7$  is a  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl or a  $QR^{11}R^{12}R^{13}$  group, wherein Q is C, Si, or Ge;

$R^{11}$ ,  $R^{12}$  and  $R^{13}$ , which may be the same as or different from each other, are hydrogen,  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radicals, optionally containing a heteroatom, with the proviso that when Q is a carbon atom, at least one of  $R^{11}$ ,  $R^{12}$  and  $R^{13}$  is a hydrogen atom,

or formula (IV)



wherein

$T^1$  is a sulfur atom or a  $CR^{16}$  group;

$T^2$  is a carbon atom or a nitrogen atom;

$z$  is 1 or 0;

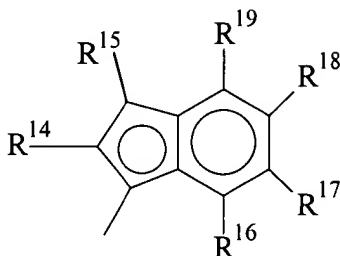
the ring containing  $T^1$  and  $T^2$  has double bonds in the allowed position;

with the proviso that if  $z$  is 1,  $T^1$  is a  $CR^{16}$  group and  $T^2$  is a carbon atom and the ring formed is a benzene ring; and if  $z$  is 0,  $T^2$  bonds directly the cyclopentadienyl ring, the 5 membered ring formed has double bond in any of the allowed positions having an aromatic character and  $T^1$  and  $T^2$  are not at the same time, a sulfur atom and a nitrogen atom.

$R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$  and  $R^{19}$ , same or different, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, any of two adjacent  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$  and  $R^{19}$  can form a ring comprising 4 to

8 atoms optionally bearing substituents.

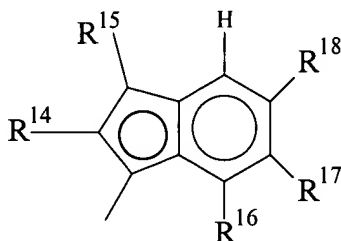
22. (Amended) The catalyst according to claim 21 wherein in the metallocene compound of formula (I) G is a moiety selected from the compound of formula (IVa),



(IVa)

wherein R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms, and any of two adjacent R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, R<sup>18</sup> and R<sup>19</sup> can form a ring comprising 4 to 8 atoms optionally bearing substituents and the benzene ring optionally being perhydrated,

formula (IVb),

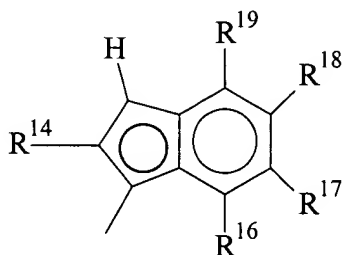


(IVb)

wherein R<sup>15</sup>, R<sup>16</sup>, R<sup>17</sup>, and R<sup>18</sup> are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements,

and any of two adjacent  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$  can form a ring comprising 4 to 8 atoms optionally bearing substituents;  $R^{14}$  being a  $C_1$ - $C_{20}$ -alkyl or  $C_6$ - $C_{20}$ -aryl group,

formula (IVc),

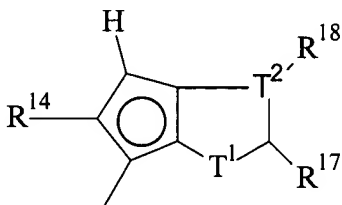


(IVc)

wherein  $R^{14}$ ,  $R^{16}$ ,  $R^{17}$ , and  $R^{18}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and optionally any of two adjacent  $R^{14}$ ,  $R^{16}$ ,  $R^{17}$ ,  $R^{18}$  and  $R^{19}$  can form a ring comprising 4 to 8 atoms optionally bearing substituents;

$R^{19}$  is a  $C_1$ - $C_{20}$ -alkyl or  $C_6$ - $C_{20}$ -aryl group or forms with  $R^{18}$  a benzene ring optionally having substituents.

or formula (IVd)



(IVd)

wherein

$T^1$  is a sulfur atom or a  $CR^{16}$  group;

$T^2$  is a carbon atom or a nitrogen atom;

the 5 member ring formed by T<sup>1</sup> and T<sup>2</sup> has double bonds in any of the allowed positions, having an aromatic character;

with the proviso that if T<sup>1</sup> is a sulphur atom T<sup>2</sup> is not a nitrogen atom;

R<sup>14</sup>, R<sup>17</sup> and R<sup>18</sup> which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements and R<sup>17</sup> and R<sup>18</sup> can form a ring comprising 4 to 8 atoms optionally bearing substituents.

23. (Amended) The catalyst according to claim 20, wherein said alumoxane is selected from methylalumoxane (MAO), isobutylalumoxane (TIBAO) or 2,4,4-trimethyl-pentylalumoxane (TIOAO).

24. (Amended) The catalyst according to claim 20, wherein the compound capable of forming a metallocene alkyl cation is a compound of formula D<sup>+</sup>E<sup>-</sup>, wherein D<sup>+</sup> is a Brønsted acid, able to donate a proton and to react irreversibly with a substituent X of the metallocene of formula (I) and E<sup>-</sup> is a compatible anion, which is able to stabilize the active catalytic species originating from the reaction of the two compounds, and which is sufficiently labile to be able to be removed by an olefinic monomer.

25. (Amended) A process for the preparation of a polymer of alpha-olefins comprising contacting one or more alpha-olefins under polymerization conditions with a catalyst obtained by contacting:

(A) a metallocene compound of formula (I)

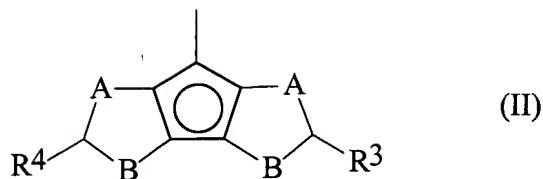


wherein

L is a divalent group bridging the moieties G and Z, selected from CR<sup>1</sup>R<sup>2</sup>, SiR<sup>1</sup>R<sup>2</sup> or (CR<sup>1</sup>R<sup>2</sup>)<sub>2</sub>, wherein R<sup>1</sup> and R<sup>2</sup>, which may be the same as or different from each other, are hydrogen, a C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>3</sub>-C<sub>20</sub>-cycloalkyl, C<sub>2</sub>-C<sub>20</sub>-alkenyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>7</sub>-C<sub>20</sub>-alkylaryl, or C<sub>7</sub>-C<sub>20</sub>-arylalkyl radical, optionally containing a heteroatom, and can form a ring having 3 to 8 atoms optionally bearing a substituent;

Z is a moiety of formula (II):





wherein

$R^3$  and  $R^4$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom;

A and B are sulfur (S), oxygen (O) or  $CR^5$ , wherein  $R^5$  is hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing a heteroatom with the proviso that if A is S or O, then B is  $CR^5$  or if B is S or O, then A is  $CR^5$ , and wherein the rings containing A and B have a double bond in the allowed position;

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements,

X, which may be the same or different, is a hydrogen atom, halogen atom, a group  $R^{10}$ ,  $OR^{10}$ ,  $OSO_2CF_3$ ,  $OCOR^{10}$ ,  $SR^{10}$ ,  $NR^{10}_2$  or  $PR^{10}_2$ , wherein the substituents  $R^{10}$  are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms;

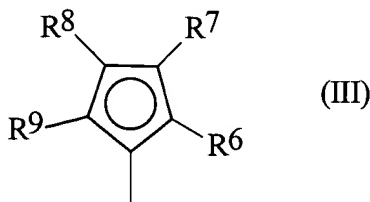
p is an integer of from 1 to 3, being equal to the oxidation state of the metal M minus 2;

with the proviso that said metallocene compound is different from:

isopropylidene (3-trimethylsilylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride, dimethylsilanediyl (3-trimethylsilylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride, isopropylidene (3-ethylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride, dimethylsilanediyl (3-ethylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride, isopropylidene (3-n-butylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride, dimethylsilanediyl (3-n-butylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride, isopropylidene (3-methylcyclopentadienyl)(7-cyclopentadiophene)zirconium dichloride,

dimethylsilanediyl (3-methylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride, isopropylidene (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride and dimethylsilanediyl (3-i-propylcyclopentadienyl)(7-cyclopentaditiophene)zirconium dichloride;

and G is a moiety of formula (III):



wherein  $R^6$ ,  $R^7$ ,  $R^8$  and  $R^9$ , which may be the same as or different from each other, are hydrogen, a  $C_1$ - $C_{20}$ -alkyl,  $C_3$ - $C_{20}$ -cycloalkyl,  $C_2$ - $C_{20}$ -alkenyl,  $C_6$ - $C_{20}$ -aryl,  $C_7$ - $C_{20}$ -alkylaryl, or  $C_7$ - $C_{20}$ -arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, at least one of substituent pairs  $R^6$  and  $R^7$ , and  $R^8$  and  $R^9$  can form a ring comprising from 3 to 8 atoms, optionally bearing substituents; with the proviso that  $R^7$  is different from  $R^8$  and when  $R^7$  is a tertbutyl radical  $R^8$  is not hydrogen; and

(B) at least one of an alumoxane and a compound capable of forming an alkyl metallocene.

27. (Amended) The process according to claim 26 wherein the process is carried out in the presence of an alpha-olefin selected from 1-butene, 1-pentene, 1-hexene, 4-methyl-1-pentene, 1-octene, 1-decene or 1-dodecene.
29. (Amended) The process according to claim 28, wherein the process is carried out in the presence of an olefin selected from propylene, 1-butene, 1-pentene, 4-methyl-1-pentene, 1-hexene, 1-octene, 4,6-dimethyl-1-heptene, 1-decene, 1-dodecene, 1-tetradecene, 1-hexadecene, 1-octadecene, 1-eicosene, allylcyclohexane, cyclopentene, cyclohexene and norbornene, 1,5-hexadiene, 1-6-heptadiene, 2-methyl-1,5-hexadiene, trans 1,4-hexadiene, cis 1,4-hexadiene, 6-methyl-1,5-heptadiene, 3,7-dimethyl-1,6-octadiene, 11-methyl-1,10-dodecadiene, or 5-ethylidene-2-norbornene.
30. (Amended) The process according to claim 25 wherein the catalyst is supported on